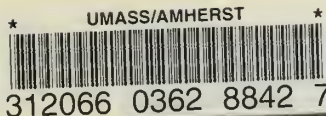


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# Hands at Work

## Occupational Carpal Tunnel Syndrome in Massachusetts

Published by the Massachusetts Department of Public Health's Occupational Health Surveillance Program  
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**Carpal Tunnel Syndrome** (CTS) is one of the most common cumulative trauma disorders involving the hand and wrist. It is often caused by risk factors at work. In February 1992, Massachusetts established a surveillance system for occupational carpal tunnel syndrome (OCTS). As part of this initiative it promulgated regulations requiring physicians to report cases to the Department of Public Health. This bulletin describes the activities of the OCTS surveillance system and summarizes the data from the 938 cases reported to the Department's Occupational Health Surveillance Program (OHSP) by Massachusetts physicians through March 1995.

### National Prevalence

Recent analysis of data collected through the National Health Interview Survey indicates that close to 1 million people annually may have diagnosed carpal tunnel syndrome, requiring medical care and leaving them at least temporarily disabled.<sup>1</sup> It has been estimated in several recent studies that approximately 50% of CTS cases may be work-related.<sup>1</sup>

In spite of mounting government, business, and media concern about occupational CTS, there are no complete national statistics on the incidence or prevalence of CTS in the workforce. We do know, however, that over the past ten years the reported number of workers afflicted with CTS has been rising. In some high risk industries, the prevalence has been estimated to be as high as 15% of the workforce. According to the U.S. Bureau of Labor Statistics, 94,300 "lost work time" cases of cumulative trauma disorders in private industry throughout the United States were reported in 1993 - 41,000 of which were CTS cases.<sup>2</sup>

***Close to 1 million people in the U.S. annually may have CTS; approximately 50% of these cases may be work-related.***

The rising incidence of OCTS is likely due, in part, to changes in diagnostic practices and better reporting, but also to changing technology and job demands. Increased automation and job specialization have fragmented many workers' tasks such that a given job may involve only a few manipulations performed thousands of times per workday with little rest.

*continued next page*

### Massachusetts Department of Public Health's Occupational Health Surveillance Program

The Occupational Health Surveillance Program (OHSP) at the Massachusetts Department of Public Health works with other state agencies to collect, analyze, and disseminate information about occupational illnesses and injuries in Massachusetts. Surveillance activities are actively linked to intervention efforts.

OHSP has received a multiyear grant from the National Institute for Occupational Safety and Health (NIOSH), through its Sentinel Event Notification System for Occupational Risks (SENSOR) Program, to develop and implement state-level surveillance and intervention systems for occupational carpal tunnel syndrome. OHSP also has funding from NIOSH to conduct surveillance and intervention activities for occupational asthma and work-related injuries to persons under 18 years of age.

If you have questions about the Department's OCTS Project, or would like information about the physician reporting requirements for occupational illnesses and injuries in Massachusetts, please contact Helen Wellman, manager of OCTS Surveillance at 617-624-5624.

## What Are We Finding in Massachusetts?

From February 1992 through March 1995, 938 confirmed and suspected cases of occupational carpal tunnel syndrome were reported to the Massachusetts Department of Public Health. It is important to note that not all existing cases are reported, and that reported cases are not necessarily representative of all cases of OCTS in Massachusetts.

### Age And Gender Distribution

Of the cases reported in the last three years, 70% are female - a higher proportion than has been reported elsewhere. The average age is 41, with 58% between the ages of 35 and 54. This is similar to the age distribution noted in previous reports. However, the finding that there are a substantial number of young workers between the ages of 18 and 24 with reported OCTS is of particular concern.

### Industry Distribution

Out of the 938 cases reported, 529 different employers are represented. The highest percentage of cases are employed in the manufacturing sector. Compared to the proportion of the Massachusetts workforce employed in manufacturing, the number of cases in this sector is disproportionately high. Within manufacturing, the largest numbers of cases are employed in the production of:

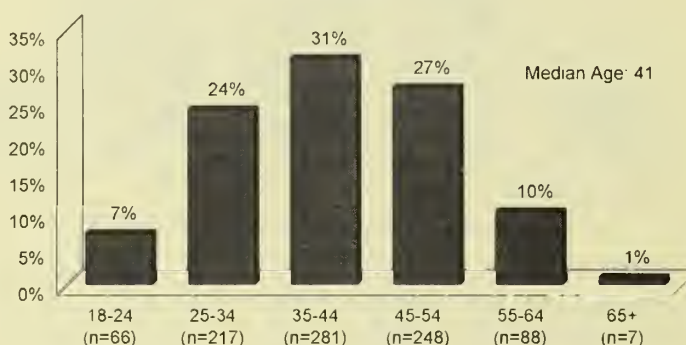
- apparel and other textile products;
- fabricated metal products;
- industrial machinery and equipment;
- transportation equipment; and
- instruments and related products

The second largest number of cases are employed in the service sector. In this category, employees in health services far out number those in any other group.

### Occupation Distribution

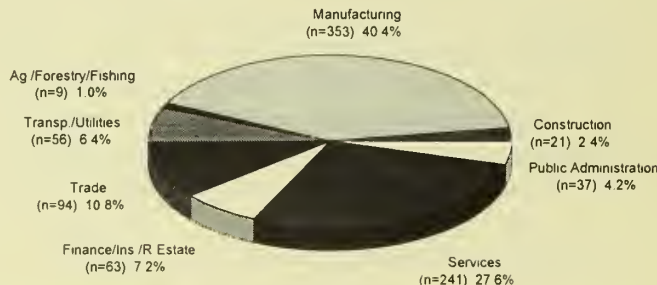
The greatest number of employees diagnosed with OCTS work in jobs involving technical, sales, and administrative support. Clerical workers account for the largest number in this group. The second largest occupation group is operators, fabricators, and laborers - primarily machine operators and assemblers.

**Distribution of Physician Reported OCTS Cases by Age at Diagnosis**  
N=907\*



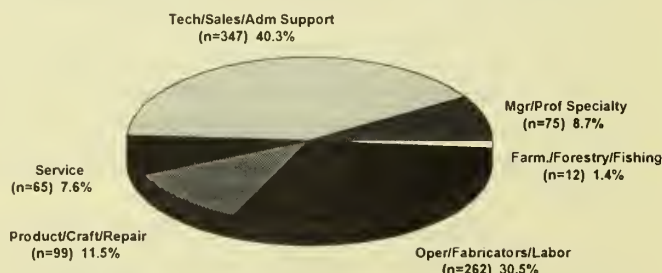
\*Percents are based on total number of responses

**Distribution of Physician Reported OCTS Cases by Industry**  
N=874\*



\*Percents are based on total number of responses

**Distribution of Physician Reported OCTS Cases by Occupation**  
N=860\*



\*Percents are based on total number of responses



## Reported Cause of OCTS

Interviews were conducted with 521 of the 938 workers reported with OCTS. Interviewed and non-interviewed cases have similar occupations. Among those interviewed, the greatest number (n=148) attribute the development of their condition to computer use or poor workstation design. Five of these workers reported specifically that use of a computer mouse led to the development of their CTS.

The second largest number of workers identified use of hand tools as the most significant cause of their CTS. Both nonpowered and powered hand tools were cited.

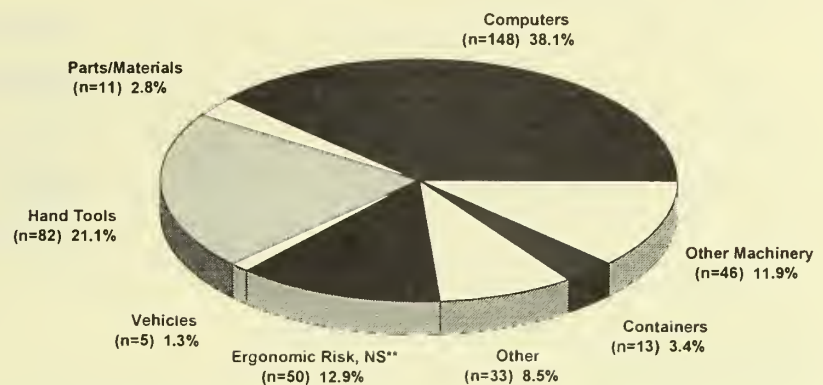
Nonpowered hand tools identified five or more times include those used for cutting, wrenches, tools used for digging, and pastry/frosting bags. Powered hand tools identified by interviewed workers include drills and other boring hand tools, and hand grinders and other surfacing hand tools.

Other sources of CTS repeatedly cited were sorting paper or mail (particularly in post offices), operating vehicles such as buses or trucks; carrying trays, pots, and pans in food service; operating cash registers and calculators; and removing pill bottle caps in pharmacies.

In fifty cases, the interviewed worker did not identify a particular source, but instead reported that his or her CTS developed as a result of repetitive work, lifting, a fast work pace, or other nonspecific ergonomic problem. This reflects the reality that OCTS may be caused by the cumulative effects of multiple factors and a single cause cannot always be isolated.

## Distribution of Interviewed OCTS Cases by Patient-Identified Source of OCTS

N=388\*

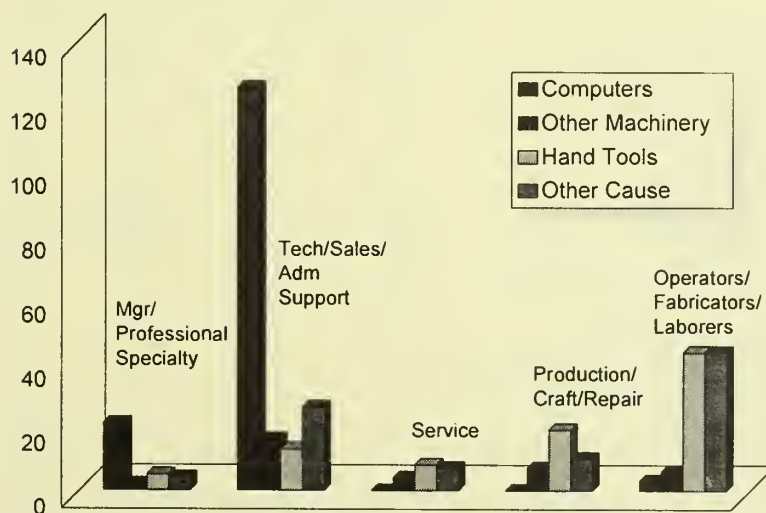


\*Percents are based on total number of responses.

\*\*Includes bending, repetition, lifting, gripping, twisting, force, work pace, acute injury.

## Distribution of Interviewed OCTS Cases by Occupation and Patient-Identified Source of OCTS

N=363\*



\*Percents are based on total number of responses.

*A 43 year old man working for a small arms manufacturer reported that the major cause of his CTS was polishing guns by hand. He stated that his CTS has restricted him almost 100% from normal daily activity, and that he feels crippled by his condition.*

## Bilateral Disease

More than 50% of the cases interviewed by OHSP staff have been diagnosed with CTS in both hands. The proportion of workers with bilateral disease was similar across occupational groups, with the highest percentage found among those employed in precision product, craft, and repair occupations. This occupational group includes mechanics, carpenters, electricians, machinists, assemblers, machine operators, and welders.

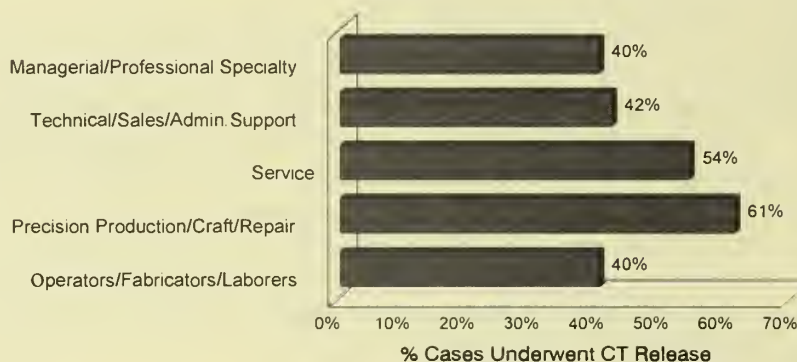
**Percentage of Interviewed OCTS Cases With Bilateral Disease by Occupation**  
N=291



## Surgery Rates

Approximately 44% of OCTS cases interviewed had undergone surgery at the time of the interview. Surgery rates vary somewhat by occupation - again highest among workers in precision product, craft and repair occupations.

**Percentage of Interviewed OCTS Cases Who Reported Having Surgery, by Occupation**  
N=233



## Who is Reporting Cases?

From February 1992 through March 1995, 225 physicians have reported at least one case of OCTS. The greatest number of cases have been reported by orthopedists, occupational medicine physicians, neurologists, and hand surgeons. Together these four specialties account for 74% of the reported cases.

**Massachusetts SENSOR: Physician Reported OCTS Cases**  
Distribution of Cases by Reporting Physician's Medical Specialty

	Number of Physicians Reporting	Number of Cases Reported
Orthopedic Medicine	66	297
Occupational Medicine	39	163
Neurology	27	129
Hand Surgery	5	103
Internal Medicine	21	88
Employee Health	16	49
Plastic Surgery	6	34
Family/General Practice	14	22
Surgery, Unspecified	5	12
Pulmonology/Allergy	7	12
Emergency Medicine	6	9
Other/Unknown	13	20
<b>Totals</b>	<b>225</b>	<b>938</b>

## Plans for the Coming Year

During the next year, OHSP staff plan to:

- Continue outreach to physicians, including semi-annual publication of this bulletin, to improve reporting of OCTS
- Survey all workers with OCTS identified by the surveillance system
- Work with NIOSH to develop technological solutions to identified ergonomic hazards in targeted high risk industries
- Conduct a study comparing cases identified through physician reports and workers' compensation records
- Expand outreach to enlist identified employers and their employees in ergonomic training

In addition to its role as a surveillance and intervention unit, OHSP also serves as a resource to Massachusetts physicians on a variety of occupational health issues. We can provide consultation with DPH's consulting occupational medicine physician; educational materials for patients; copies of journal articles; presentations at grand rounds or medical association meetings; and referrals to state and federal agencies for worksite evaluations. We are also happy to work with physicians to develop simplified methods of reporting. For more information or to report a case, call OHSP at (617) 624-5624.



### References

<sup>1</sup> Tanaka S, Wild D, Seligman P, Behrens V, Cameron L, and Putz-Anderson V.: The US prevalence of self-reported carpal tunnel syndrome: 1988 national health interview survey data. *Am J of Public Health* 84(11):1846-1848, 1994.

<sup>2</sup> U.S. Department of Labor, Bureau of Labor Statistics: Occupational Injuries and Illnesses: Counts, Rates and Characteristics, 1992, bulletin 2455.

<sup>3</sup> Webster BS, Snook SH: The Cost of Compensable Upper Extremity Cumulative Trauma Disorders. *J Occup Med* 36(7):713-717, 1994.

<sup>4</sup> Vern Putz-Anderson: Cumulative trauma disorders: A manual for musculoskeletal diseases of the upper limbs. Bristol PA, Taylor & Francis Inc., 1988.

### Occupational Disease and Injury Reporting - Request for Information

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Telephone: \_\_\_\_\_ Medical Specialty: \_\_\_\_\_

Detach and send to:

Massachusetts Department of Public Health  
Occupational Health Surveillance Program, 6th Floor  
250 Washington Street Boston, MA 02108-4616

Please Send:

\_\_\_\_\_ Additional Case Report Forms and Reporting Guidelines

\_\_\_\_\_ Resource Guide to Occupational Health Information and Services in Massachusetts

Massachusetts Department of Public Health  
Occupational Health Surveillance Program, 6th Floor  
250 Washington Street  
Boston, MA 02108-4616